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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,732	01/08/2002	Hideo Nakajima	SAEGU97.001APC	8246
20995	7590	07/22/2004		
KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			EXAMINER KERNS, KEVIN P	
			ART UNIT 1725	PAPER NUMBER

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/030,732

Applicant(s)

NAKAJIMA, HIDEO

Examiner

Kevin P. Kerns

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2002.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,8 and 10 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,2,8 and 10 is/are rejected.
7) ☒ Claim(s) 2 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 08 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/2/02 & 2/4/03.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "2" and "22" have been used to designate both a "molten metal cooling and solidifying section" and a "molten metal holding section" (see pages 18 and 22). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The

disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The disclosure is objected to because of the following informalities: on page 2, line 15 through page 4, line 11, the old claim language (from original claims 1-10) remains, and should be changed appropriately. On page 24, line 17, it is believed that "tabular" should be changed to "tubular". Appropriate correction is required.

Claim Objections

4. Claim 2 is objected to because of the following informalities: in the 3rd line, "aluminium" should be changed to "aluminum". Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapovalov (US 5,181,549) in view of JP 5-59462.

Shapovalov discloses a method for manufacturing porous metallic articles, in which the method includes the steps of melting a raw metal material, including copper, iron, nickel, magnesium, and various alloys (column 6, lines 62-68) under a wide range

of pressures between 0.1 and 10 MPa, inclusive of pressures between 0.2 and 2.5 MPa (column 7, lines 3-13), such that the pressurization gas includes hydrogen gas (column 4, lines 27-61); and providing cooling while controlling gas pressure to the molten metal (after pouring into the mold) to enhance directional solidification in the mold inside the sealed vessel (autoclave 10) to form the cast metal porous body product (abstract; column 2, lines 42-68; column 3, lines 1-15 and 58-68; column 4, lines 1-68; column 5, lines 1-65; column 6, lines 46-68; column 7, lines 1-68; and Figures 1-8). Shapovalov does not specifically disclose the step of maintaining the raw metal material under a reduced pressure at a preheating temperature just below the melting point of the metal.

However, JP 5-59462 discloses a method of producing high purity copper, with the method including evacuating a high vacuum vessel to less than 10^{-3} torr pressure while heat treating/degassing the copper in a temperature range between 500 and 1,000 degrees Celsius (below the copper melting point) for more than 1 hour, for the purpose of degassing the metal, and thereby obtaining a high purity (copper) metal product (abstract).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the method for manufacturing porous metallic articles, as disclosed by Shapovalov, by adding the step of operating at a reduced pressure at a preheating temperature just below the melting point of the metal, as taught by JP 5-59462, in order to degas the metal, and thereby obtain a high purity (copper) metal product (JP 5-59462; abstract).

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shapovalov (US 5,181,549) in view of JP 5-59462 as applied to claim 1 above, and further in view of JP 3-294437.

Shapovalov (in view of JP 5-59462) discloses and/or suggests the features of claim 1 above. Neither Shapovalov nor JP 5-59462 specifically discloses that the casting is conducted by a continuous casting method.

However, JP 3-294437 discloses a method and apparatus for manufacturing porous metallic materials, in which the process includes continuously draining slurried porous metal 12 from a drain nozzle 3 to provide continuous casting in the mold below the molten metal 10 in the container, such that the continuously draining/casting of the porous metal is advantageous for continuously obtaining a porous metal product having a wide range of shapes and porosity (abstract; and Figures 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the method for manufacturing porous metallic articles, as disclosed by Shapovalov, by adding the step of operating at a reduced pressure at a preheating temperature just below the melting point of the metal, as taught by JP 5-59462, in order to degas the metal, and thereby obtain a high purity (copper) metal product, and by further using a continuous casting method, as disclosed by JP 3-294437, in order to continuously obtaining a porous metal product having a wide range of shapes and porosity (JP 3-294437; abstract).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,263,953 and JP 59-129740 are also cited as related art.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns* 7/14/04
Examiner
Art Unit 1725

KPK
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July 14, 2004